IN THE CLAIMS

Please amend the claims as follows where a copy of the claims with the amendments delineated are set forth below in accordance with the PTO guidelines. This listing of claims will replace all prior versions, and listings, of claims in this application.

1 - 10. (Cancelled)

11. (Currently amended) A method for ~~the optimization of multi-objective problems~~ multi-objective optimization of a mechanical, aerodynamic or hydrodynamic body using evolutionary algorithms, the method comprising the steps of:

(a) encoding object parameters of the mechanical, aerodynamic or hydrodynamic body to be optimized as individuals;

(b) setting up an initial population of the individuals as parents;

(c) reproducing ~~the parents to create~~ a plurality of offspring individuals from the parents, the individuals representing object parameters to be optimized;

(d) evaluating ~~the~~ quality of the offspring individuals ~~by means of~~ using a fitness function~~, wherein the fitness function is composed of the~~ comprising a sum of weighted sub-functions~~ that represent an objective~~, each weighted sub-function corresponding to an objective of the multiple objective optimization;

(e) selecting the one or more offspring individuals having the highest evaluated quality value as parents for a next evolution cycle ~~the next evolution cycle, characterized in that for each sub-function of the fitness function, an interval is defined within which the weight of the associated sub-function is allowed to change~~;

(f) changing weights of the weighted sub-functions for the next cycle within predetermined ranges, a first weight of the weighted sub-functions changing within a first predetermined range, a second weight of the weighted sub-functions changing within a second predetermined range different from the first predetermined range, the first predetermined range and the second predetermined range representing preferences given to objectives of the multiple objective optimization;

(g) repeating steps (c) to (f) until a termination criterion is met; and

(h) outputting one or more offspring individuals after the termination criterion is met as the optimized object parameters of the mechanical, aerodynamic or hydrodynamic body

~~wherein weight intervals of different sub-functions have different values to reflect different priorities of the underlying objectives; and~~

~~during the optimization the weights for the sub-functions are changed dynamically respectively within the predefined interval for every weight~~.

12. (Currently amended) The method of claim 11, further comprising the step of:

converting ~~human~~ preferences of the objectives represented ~~by linguistic preference relations~~ as relative language into parameterized~~, real-valued preference relations~~ values to generate the first and second predetermined ranges within which the sub-functions can change ~~the intervals defining the allowed range of weight changes~~.

13. (Currently amended) The method of claim 12 further comprising the step of:

converting the ~~parameterized preference relations into real-valued intervals by letting the parameters take all the allowed value instead of assigning one specific value to each parameter~~ preferences into parameterized values comprises assigning values within the first and second predetermined ranges to the parameterized values.

14. (Currently amended) The method of claim 11, wherein ~~the weights for the different objectives~~ the weights of the weighted sub-functions are randomly re-distributed within ~~the defined intervals~~ the first and second predetermined ranges among the different offspring individuals in each ~~generation~~ cycle.

15. (Currently amended) The method of claim 11, further comprising the step of:

gradually changing the weights of the weighted sub-functions within the first and second predetermined ranges with change in the cycle ~~for the different objectives gradually within the defined intervals with the proceeding of optimization~~.

16. (Currently amended) The method of claim 15, further comprising the step of:

changing the weights within the ~~intervals~~ predetermined ranges according to a periodic function.

17. (Currently amended) The method of claim 15, wherein each offspring individual ~~has the same weight in the same generation~~ is evaluated using the same weighted sub-functions in the same cycle.

18. (Currently amended) The method of claim 15, wherein the ~~periodic change has the shape of a sine function applied on the generation number~~ at least one weight generated from a sine function having a number of the cycle as its argument.

19. (Cancelled).

20. (Currently amended) A computer ~~software program for implementing a method according to claim 1 when run on a computing device~~ product for multi-objective optimization of a mechanical, aerodynamic or hydrodynamic body, the computer program product comprising a computer readable storage medium structured to store instructions executable by a processor, the instructions, when executed cause the processor to:

(a) encode object parameters of the mechanical, aerodynamic or hydrodynamic body to be optimized as individuals;

(b) set up an initial population of the individual as parents;

(c) reproduce a plurality of offspring individuals from the parents, the individuals representing object parameters to be optimized;

(d) evaluate quality of the offspring individuals using a fitness function comprising a sum of weighted sub-functions, each weighted sub-function corresponding to an objective of the multiple objective optimization;

(e) select the one or more offspring individuals having the highest evaluated quality value as parents for a next evolution cycle;

(f) change weights of the weighted sub-functions for the next cycle within predetermined ranges, a first weight of the weighted sub-functions changing within a first predetermined range, a second weight of the weighted sub-functions changing within a second predetermined range different from the first predetermined range, the first predetermined range and the second predetermined range representing preferences given to objectives of the multiple objective optimization;

(g) repeat steps (c) to (f) until a termination criterion is met; and

(h) output one or more offspring individuals after the termination criterion is met as the optimized object parameters of the mechanical, aerodynamic or hydrodynamic body.